

US-PAT-NO: 6608930

DOCUMENT-IDENTIFIER: US 6608930 B1

TITLE: Method and system for analyzing video content using  
detected text in video frames

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Application Filing Date - AD (1):

19990809

Detailed Description Text - DETX (47):

It is also possible to use text for analyzing and labeling specific video frames. For example, image processor 120 may identify and extract live news reports that were broadcast as part of a particular news program or were given by a particular news reporter. Image processor 120 may do this by searching for **keywords** in image text, including "LIVE", the program name (e.g., "NEWS4 AT NITE"), or the reporter's name (e.g. "Carol Jones").

Detailed Description Text - DETX (52):

FIGS. 3A and 3B illustrate exemplary video frames 305 and 350 containing image text having selected attributes identifiable by video processing device 110 in FIG. 1. The image text in video frames 305 and 350 does not necessarily appear simultaneously on screen during any video clip. Video frames 305 and 350 are presented to illustrate selected attributes of image text, such as scrolling motion, location, fading, brief duration and **keywords**. For the purposes of brevity and clarity in explaining the operation of the present invention, image text from different types of programs are combined into video frames 305 and 350.

Detailed Description Text - DETX (53):

Video frame 305 represents text extracted from a video frame of a television program. In this case, the system/user has selected attributes for isolating horizontally or vertically scrolling text, such as text associated with program credits or ticker lines of information at the bottom of the frame. A scrolling attribute is detected by identifying text that is identical in a sequence of frames, except that the position of the text shifts slightly from frame to frame. Furthermore, even for program credits that are not scrolling, image processor 120 may identify program credits by identifying a sequence of text messages that appear only briefly on the screen and, optionally, by further identifying **keywords** in the text, such as "producer," "director," "starring," "cast," and the like.

Detailed Description Text - DETX (56):

Similarly, advertisement text 360 has the keyword attributes of a phone number associated with an advertiser (e.g., "1-800-") and advertisement text 365 has the keyword attributes of an Internet address associated with an advertiser (e.g., "www.[company name].com"). Furthermore, advertisement text 360 and advertisement text 365 have another text attribute that may be used to identify a commercial advertisement, namely both are located near the center of video image 350. Most other types of text are located at the bottom or in the corner of the screen. Finally, text area 370 has a keyword attribute (namely "news") that identifies the frame as being part of a news program. Text area 375 has another keyword attribute (namely "live") that indicates the displayed text frame is part of a news program.

#### Detailed Description Text - DETX (58):

Commercial attributes 405 represent characteristics of commercial advertisement text that may be extracted in a file for viewing. Attributes associated with commercial content may include text within certain size or placement restrictions, text of brief duration, display of phone numbers, mailing addresses, Internet addresses, and keywords within the commercial such as "sale," "manufacturer rebate," or the like.

#### Detailed Description Text - DETX (60):

Program Type attributes 415 include text attributes that identify a particular type of program (sports, news, music video, etc.). These types of programs may be identified as described above by searching for box score attributes, including sports league keywords (e.g., NBA, NHL), news program keywords (e.g., "news," "Weather," "live"), or music video keywords (e.g., "producer," "recorded by").

#### Claims Text - CLTX (1):

1. For use in a system capable of analyzing image text in video frames, a video processing device capable of one of filtering and searching video streams in response to receipt of at least one selected image text attribute, wherein said selected image text attribute is a non-character attribute, said video processing device comprising: an image processor capable of receiving a first video stream comprising a plurality of video frames, detecting and extracting image text from said plurality of video frames, determining at least one non-character attribute of said extracted image text, comparing said at least one extracted image text non-character attribute and said at least one selected image text attribute, and, in response to a match between said at least one extracted image text non-character attribute and said at least one selected image text attribute, at least one of: modifying at least a portion of said first video stream; transferring at least a portion of said first video stream; and labeling at least a portion of said first video stream.

#### Claims Text - CLTX (9):

9. An image text analysis system comprising: a video processing device capable of one of searching and filtering video streams in response to receipt of at least one selected image text attribute, wherein said selected image text attribute is a non-character attribute, said video processing device

comprising: an image processor capable of receiving a first video stream comprising a plurality of video frames, detecting and extracting image text from said plurality of video frames, determining at least one non-character attribute of said extracted image text, comparing said at least one extracted image text non-character attribute and said at least one selected image text attribute, and, in response to a match between said at least one extracted image text non-character attribute and said at least one selected image text attribute, at least one of: modifying at least a portion of said first video stream; transferring at least a portion of said first video stream; and labeling at least a portion of said first video stream; a display monitor for displaying said at least a portion of said first video stream; and a user input device for receiving user commands.

Claims Text - CLTX (17):

17. For use in a system capable of analyzing image text in video frames, a method of one of searching and filtering video streams in response to receipt of at least one selected image text attribute, wherein the selected image text attribute is a non-character attribute, the method comprising the steps of: receiving a first video stream comprising a plurality of video frames; detecting and extracting image text from the plurality of video frames; determining at least one non-character attribute of the extracted image text; comparing the at least one extracted image text non-character attribute and the at least one selected image text attribute; and in response to a match between the at least one extracted image text non-character attribute and the at least one selected image text attribute, at least one of: modifying at least a portion of the first video stream; transferring at least a portion of the first video stream; and labeling at least a portion of the first video stream.

Claims Text - CLTX (21):

21. For use in a system capable of analyzing image text in video frames, computer executable process steps stored on a computer readable storage medium for performing one of searching and filtering video streams in response to receipt of at least one selected image text attribute, wherein the selected image text attribute is a non-character attribute, the computer executable process steps comprising the steps of: receiving a first video stream comprising a plurality of video frames; detecting and extracting image text from the plurality of video frames; determining at least one non-character attribute of the extracted image text; comparing the at least one extracted image text non-character attribute and the at least one selected image text attribute; and in response to a match between the at least one extracted image text non-character attribute and the at least one selected image text attribute, at least one of: modifying at least a portion of the first video stream; transferring at least a portion of the first video stream; and labeling at least a portion of the first video stream.